

HVAC Drive

The smart money is on an HVAC drive from Taco, America's leading pump manufacturer. No one knows more about controlling pumps than the people who make the pumps!

Ideal for controlling HVAC applications using Delta P or Delta T, geothermal hot/cold changeover, or domestic water boosters, the SmartDrive HVAC can handle any job thanks to its outstanding features. Available in a wide power range, the VFD has all the functionality to deliver the efficiency expected of today's complex HVAC systems.



+TSL This symbol tell you that a +TSL upgrade is available for this unit.

What does TSL do?

Taco System Logic controls the variable speed drive to optimize pump performance. Setpoints and controls are programmed at our factory to allow our pumps to run at much lower pressures than most industry professionals would consider. In addition, Taco Fault Tolerant Control maintains control even when the feedback signal wire is compromised. Pumping at much lower speeds will consume substantially less energy and require less maintenance, so along with peace of mind, you get superior efficiency, responsive comfort and reduced life cycle costs all in one neat package. Add the SmartDrive +TSL option when you choose your next Taco pump.



HVAC Drive

Application options

A wide range of integrated HVAC options can be fitted in the drive:

- **General purpose I/O option (MCB 101)**
3 digital inputs, 2 digital outputs, 1 analog current output, 2 analog voltage inputs.
- **Relay option (MCB 105)**
Adds 3 relay outputs
- **Analog I/O option (MCB 109)**
3 Pt1000/Ni1000 inputs, 3 analog voltage outputs
- **External 24 VDC supply (MCB 107)**
24 VDC external supply can be connected to supply control and option cards when main power is disconnected.
- **Mains Disconnect Switch**
Built in (Optional)

HVAC PC software tools

- **MCT 10** Ideal for commissioning and servicing the drive
- **VF Energy Box** Comprehensive energy analysis tool, shows the drive payback time
- **MCT 31** Harmonic analysis tool



Feature	Benefit
All built-in – low investment	
Modular product concept and a wide range of options	Low initial investment – max. flexibility, later upgrade possible
Dedicated HVAC I/O functionality for temperature sensors etc.	External conversion saved
Decentral I/O control via serial communication	Reduced wiring costs and fewer controller I/O needed
Wide range of HVAC protocols for BMS controller connectivity	Less extra gateway solutions needed
4 x auto tuned PID's	No external PID controllers required
Smart Logic Controller	Often makes external controller unnecessary
Real Time Clock	Enables daily and weekly settings
Integrated fan, pump and compressor functionality	Reduces external control and conversion equipment needs
• Fire Override Mode, Dry Run Detection • Variable or Constant Torque	Protects equipment and saves energy
Save energy – less operation cost	
Automatic Energy Optimizer function, advanced version	Saves 5 – 15% energy
Advanced energy monitoring	Overview on energy consumption
Energy saving functions i.e. flow compensation, sleep mode	Saves energy
Unequaled robustness – maximum uptime	
Robust single enclosure	Maintenance-free
Unique cooling concept with no ambient air flow over electronics	Problem-free operation in harsh environments
Max ambient temp. 50° C without derating	No external cooling or derating necessary
User friendly – save commissioning and operating cost	
Smart Start	Quick and precise start-up
Award winning graphic display, 27 languages	Effective commissioning and operation
USB plug and play connection	Easy to use PC software tools
Global HVAC support organization	Local service – globally
Built-in DC coils and RFI filters – no EMC concerns	
Harmonic suppression — Integrated dual DC-link choke	Equivalent: 5% AC input line reactor Supporting IEEE 519-1992 requirements
Integrated EMC filters	Meets EN 55011 Class B, A1 or A2

Product range:

200 – 240 V/ 3 phase 1.5 – 60 HP
 380 – 480 V/ 3 phase 1.5 – 1350 HP
 525 – 600 V/ 3 phase 1.5 – 1350 HP
With 110% overload torque

200 – 240 V/ 1 phase 1.5 – 10 HP
With 110% overload torque

Available enclosure ratings:

NEMA TYPE 1 / IP 21
 NEMA TYPE 12 / IP 55
 NEMA TYPE 3R / IP 64

HVAC Drive

Power supply	
Supply voltage (3 Phase)	200–240 V ±10%
Supply voltage (3 Phase)	380–480 V ±10%
Supply voltage (3 Phase)	525–600 V ±10%
Supply voltage (Single Phase)	200–240 V ±10%
Supply frequency	50/60 Hz
Displacement Power Factor (cos φ) near unity	(> 0.98)
Switching on input supply L1, L2, L3	1–2 times/min.
Output data (U, V, W)	
Output voltage	0–100% of supply voltage
Switching on output	Unlimited
Ramp times	1–3600 sec.
Open/Closed loop	0–1000 Hz
Digital inputs	
Programmable digital inputs	6*
Logic	PNP or NPN
Voltage level	0–24 VDC
<i>* 2 can be used as digital outputs</i>	
Pulse inputs	
Programmable pulse inputs	2*
Voltage level	0–24 VDC (PNP positive logic)
Pulse input accuracy	(0.1–110 kHz)
<i>* Utilize some of the digital inputs</i>	
Analog input	
Analog inputs	2
Modes	Voltage or current
Voltage level	0 V to +10 V (scaleable)
Current level	0/4 to 20 mA (scaleable)
Analog output	
Programmable analog outputs	1
Current range at analog output	0/4–20 mA
Relay outputs	
Programmable relay outputs	2 (240 VAC, 2 A and 400 VAC, 2 A)
Fieldbus communication (3 Phase Models)	
Standard built-in: FC Protocol N2 Metasys FLN Apogee Modbus RTU BACnet	Optional: LonWorks (MCA 108) BACnet (MCA 109) DeviceNet (MCA 104) Profibus (MCA 101)
Fieldbus communication (Single Phase Models)	
Standard built-in: FC Protocol Modbus RTU	Optional: Modbus TCP, Profibus, DeviceNet, Ethernet IP
OSHPD Special Seismic Certification	
Pre-Approval	Certification expedites seismic authorization by regulatory agencies.



These drives perform better because of their robust DC link reactor, standard in every SmartDrive HVAC. This device offers comparable harmonic performance to AC input reactors without detrimental input voltage reductions, and without the extra heat that would typically be removed via additional fans or other devices.

SmartDrive^{+TSL}

with integrated Taco System Logic

Control Options

Taco System Logic modulates and stages pumps as system demand changes. No need for external controllers. +TSL runs right on the drive.

+TSL Benefits

- Optimize your energy efficiency
- No additional hardware required
- No Programming required
- Fault Tolerant Control

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SmartDrive | HVAC



SmartDrive | SP



SmartDrive | VP

Four SmartDrive +TSL Control options to choose from:

- Delta-P HVAC Pump Set, 1-3 pump, Lead/Lag, 1-3 Zones
- Delta-T HVAC Pump Set, 1-3 pump, Lead/Lag
- Delta-T, Geothermal Hot/Cold Changeover, 1-2 Pump Alternation
- Domestic Water Booster Set, 1-3 pump, Lead/Lag



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